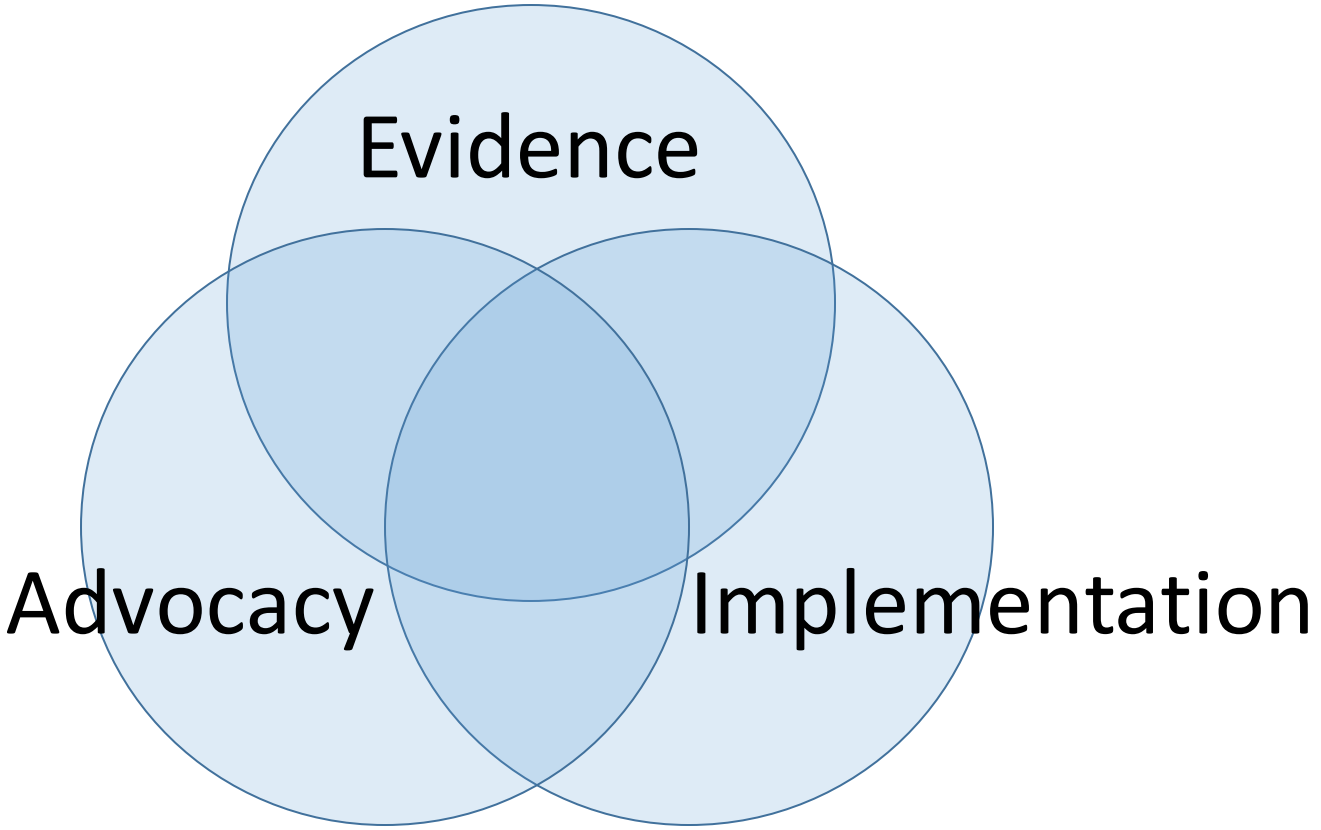
Chlorhexidine application to the umbilical cord stump:



Stephen Hodgins
Associate Professor, University of Alberta
Editor-in-Chief, Global Health: Science & Practice

Applying lessons from the Child Survival Revolution

burden of disease ► efficacious interventions

SNL launched
MDG inception
2000

PMNCH &
Countdown
began
2005

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2013

Nepal
Mullany
2006

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Arifeen

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Sazawal
2016

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call for research
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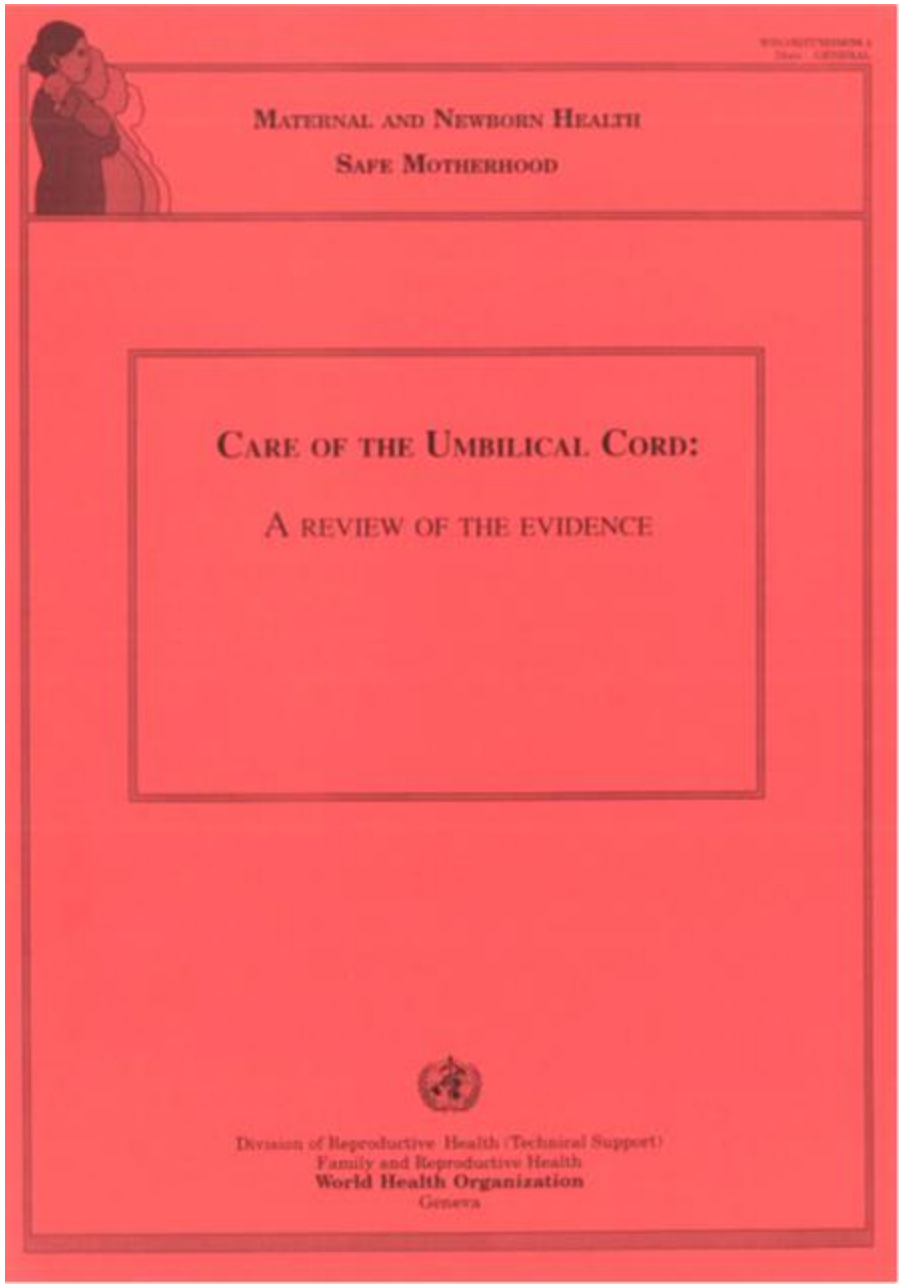
1995 1996 1997 1998 1999 **2000** 2001 2002 2003 2004 **2005** 2006 2007 2008 2009 **2010** 2011 2012 2013 2014 **2015** 2016 2017 2018 2019 **2020**



"There is not enough evidence to recommend the widespread use of topical antimicrobials on the cord stump. The decision to use them will depend very much on local circumstances. In hospitals, if newborns are kept in nurseries or in intensive care units, it is probably best to apply a topical antimicrobial to the cord stump at birth & for the first three days to prevent umbilical colonization with pathogenic bacteria & cross-infections. The choice of the substance will depend on the predominant flora … If this is unknown, the chosen antiseptic should have a broad spectrum of activity & should be culturally acceptable, affordable & available….

For home deliveries & for cord care after discharge from hospital, clean cord care is sufficient & the application of an antiseptic is not required. In areas at high risk of neonatal tetanus or where harmful practices such as putting cow dung on the stump are prevalent, an antimicrobial can be recommended to replace the harmful substance. The chosen antimicrobial should have a broad spectrum of activity against bacteria & should be cheap, culturally acceptable (a colored antiseptic is usually preferred) & available."

Specifically on needed future research, the 1998 WHO document stated that…

"**Hospital & community-based studies are needed in developing countries to compare the risk of cord infection and neonatal tetanus when the cord is kept clean & dry & nothing is applied to it with the risk when an antimicrobial or a dusting powder is used**. [Specific] research questions to be answered include:

- Will the application of an antimicrobial agent to the cord at the time of cutting & in the first few days after birth decrease the rate of cord infections & neonatal tetanus, particularly in situations where the recommended clean delivery & clean cord care practices are unlikely to be met (home deliveries)?
- If yes, which antimicrobial agent is most effective - on the basis of what is known about biology, safety and cost?
- How often must the agent be applied each day & for how many days after birth?"

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Study	Birth-weight <2500g	Place of birth	NMR/1000 in control arm	Omphalitis in control arm	Effect size: infection, mortality
Nepal (Mullany **2006**)	**30%**	Home (92%) & HF	**32.8**	**20%**	Severe: **0.25** (0.12 – 0.53) Moderate: **0.46** (0.36 – 0.59) NMR: **0.76** (0.55 – 1.04)
Bangladesh (Arifeen **2012**)	**33%**	Home (93%) & HF	**42.5**	**23%**	<u>Single application</u> Severe: **0.77** (0.40 – 1.48) Moderate: **0.90** (0.55 – 1.46) NMR: **0.80** (0.60 – 0.98) <u>Multiple-day application</u> Severe: **0.35** (0.15 – 0.81) Moderate: **0.55** (0.31 – 0.95) NMR: **0.94** (0.78 – 1.14)
Pakistan (Soofi **2012**)	N/A	Home (TBA-attended)	**36.1**	**6%**	Any infection: **0.58** (0.41 – 0.82) NMR: **0.62** (0.45 – 0.85)
Zambia (Semrau **2016**)	**5%**	Home (36%) & HF	**13.6**	**0.6%**	Any infection: **0.73** (0.47 – 1.13) NMR: **1.12** (0.88 – 1.44)
Pemba (Sazawal **2016**)	**7%**	Home (49%) & HF	**11.7**	**21%**	Any infection: **0.65** (0.61 – 0.70) NMR: **0.90** (0.74 – 1.09)

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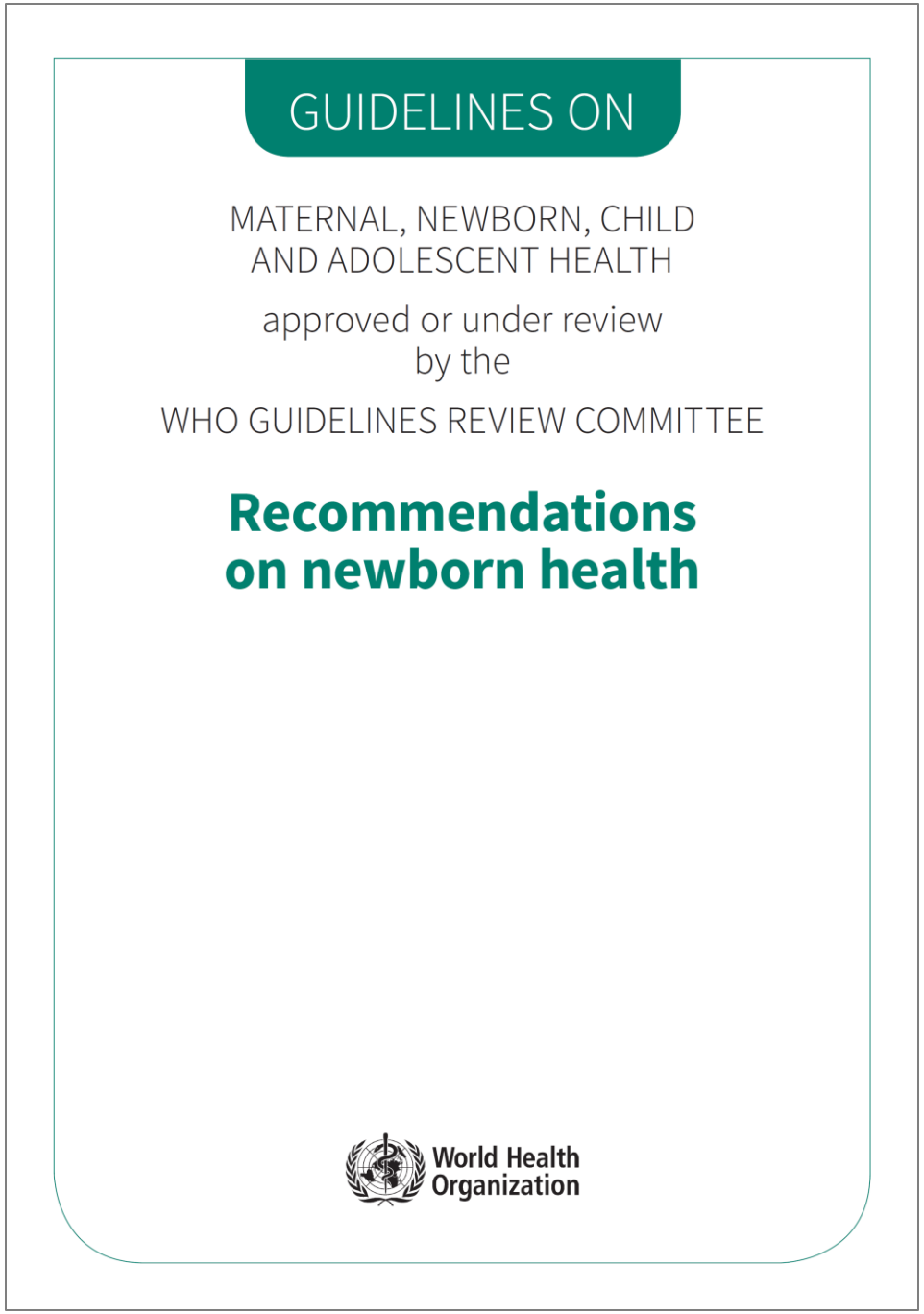

"Daily chlorhexidine application to the umbilical cord stump during the 1st week of life is recommended for newborns born at home in settings with high neonatal mortality (NMR>30/ 1000). Clean, dry cord care is recommended for newborns born in health facilities, and at home in low neonatal mortality settings."

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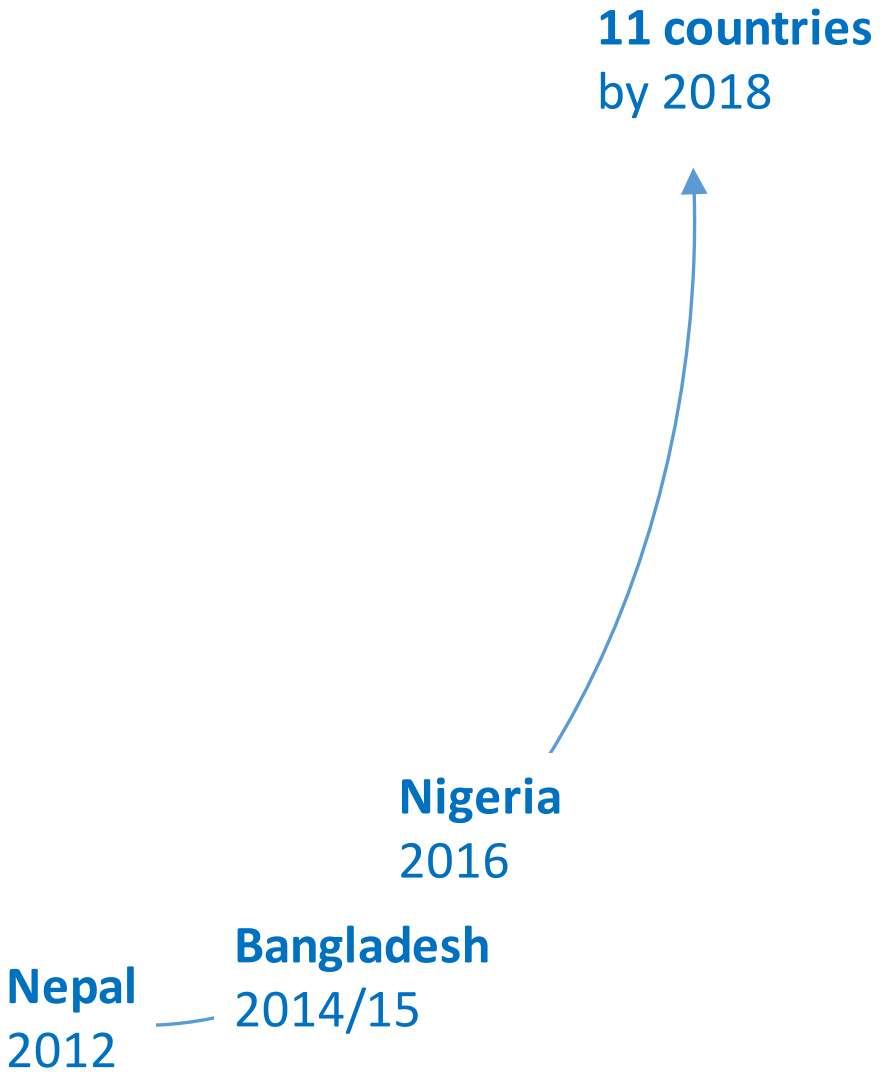
Adoption & Scale-Up



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Implementation—lessons learned

- Partnership/ collaboration
- Private sector
- Context-specific epidemiology, strategy
- Performance measurement & management
- Complexity